

had the head perfect, both his and Dr. Anderson's examples being quite fresh. Mr. Brookhouse informed us that his specimen had been placed in "very weak spirit"; but it is clear that the worm had been injuriously affected thereby, and the ova had lost their vitality.

III. "On the Rate of Passage of Crystalloids into and out of the Vascular and Non-Vascular Textures of the Body." By HENRY BENCE JONES, A.M., M.D., F.R.S. Received April 26, 1865.

(Abstract.)

The paper is divided into five sections—

- 1st. On the method of analysis, and its delicacy.
- 2nd. Experiments on animals to which salts of lithium were given, upon the rate of their passage into the textures.
- 3rd. On the rate of the passage of lithium-salts out of the textures.
- 4th. Experiments on healthy persons, and on cases of cataract.
- 5th. On the presence of lithium in solid and liquid food.

1. Three methods of analysis were followed, according as much or little lithium was present: first, simply touching the substance with a red-hot platinum-wire; secondly, extracting the substance with water; thirdly, incinerating the substance and treating it with sulphuric acid, and exhausting with absolute alcohol. $\frac{1}{12,000,000}$ of a grain of chloride of lithium in distilled water could be detected, and $\frac{1}{6,000,000}$ to $\frac{1}{2,000,000}$ of chloride of lithium in urine.

2. *On Rate of Passage into the Textures through the Stomach.*

Even in a quarter of an hour three grains of chloride of lithium, given on an empty stomach, may diffuse into all the vascular textures, and into the cartilage of the hip-joint and the aqueous humour of the eye. In very young and very small guinea-pigs which have received the same quantity of lithium, in thirty or thirty-two minutes it may be found even in the lens; but in an old pig in this time it will have got no further than the aqueous humour. If the stomach be empty, in an hour the lithium may be very evident in the outer part of the lens, and very faintly traceable in the inner part; but if the stomach be full of food, the lithium does not in an hour reach the lens. Even in two hours and a half lithium may be more marked in the outer than in the inner part of the lens. In four hours the lithium may be in every part of the lens; but less evidence of its presence will be obtained there than from the aqueous humour. In eight hours, even, the centre of the lens may show less than the outer part. In twenty-six hours the diffusion had taken place equally throughout every part of the lens. If the lithium is injected under the skin, in ten minutes it may be found in the crystalline lens, and even in four minutes, after the injection of three grains of chloride, the lithium may be in the bile, urine, and aqueous humour of the eye.

3. *On the Rate of Passage out of the Textures.*

After two grains of chloride of lithium, in six hours the lithium was more distinct in the outer than in the inner part of the lens. In twenty-four hours no difference in the different parts of the lens was detectable. In forty-eight hours no difference was observed. In ninety-six hours no lithium was detectable in the lens or cartilage of the hip-joint. The urine showed lithium very distinctly even in one drop.

After one grain of chloride of lithium, in five hours and a half the lithium was more distinct in the outer than in the inner part of the lens. In twenty-four hours and a half there was no difference throughout the lens. In forty-eight hours the watery extract of the lens showed faint traces of lithium. In seventy-two hours and a half (three days) the alcoholic extract of the lens showed no lithium. The urine still showed lithium distinctly in one drop, and it continued to be found in the watery or alcoholic extract for twenty-one days.

After half a grain of chloride of lithium, in three hours and fifty minutes traces of lithium could be found in the lens, and for thirty-seven or thirty-eight days traces of lithium could be found in the urine.

After a quarter of a grain of chloride of lithium, in five hours and a quarter the aqueous humour showed lithium, and all the organs showed lithium, but none was in the lens. In another pig, in twenty-four hours all the organs showed less lithium, and none was found in the aqueous humour.

After a quarter of a grain, in five hours and thirty-five minutes lithium was distinct in the aqueous humour, and very faintly traceable in the lens; and after sixteen days the minutest traces of lithium could be detected in the lens, the liver, the kidney; but no trace could be found in the blood.

After three grains of chloride of lithium, in four hours lithium was in the hair of the belly, and for thirty-two days the urine showed lithium very distinctly. The thirty-third day after the lithium the lens was found to contain minute traces of lithium, and even after thirty-nine days the lithium was in the alcoholic extract of the urine.

With three grains of chloride of lithium, a young pig in half an hour had lithium in the watery extract of the lens. In the same time an old pig had no lithium in the lens.

With two grains, a young pig in six hours had lithium distinctly throughout the whole lens. An old pig in the same time had lithium in the outer part of the lens, but scarcely the minutest trace in the inner part of the lens.

4. *Experiments on Healthy Persons and on Cases of Cataract.*

Ten grains of carbonate of lithia, taken three or four hours after food by a man, require from five to ten minutes to pass from the stomach to the urine, and this quantity of lithia will continue to produce traces of lithium in the urine for from six to seven days.

Two grains of chloride or carbonate of lithia, taken shortly after food by a boy, gives no appearance in the urine until from ten to twenty minutes; and this quantity continues to pass out for five, seven, or eight days.

Experiments made by the ordinary mode of analysis showed that four grains of sulphate of protoxide of iron, taken by a man almost fasting, gave a trace in the urine in seven minutes. Seven grains gave distinct appearance in ten minutes; and in ten minutes and a half one grain of iodide of potassium, taken by the same man fasting, appeared in the urine in twelve minutes.

When no lithia had been taken, seven cataracts were examined most carefully, and only one showed an exceedingly feeble trace of lithium.

When twenty grains of carbonate of lithia were taken twenty-five minutes before the operation, the lens showed no lithium.

When twenty grains of carbonate of lithia were taken two hours and a half before the operation, the lens showed lithium in the watery cataract.

When twenty grains of carbonate of lithia were taken between four and five hours before the operation, the lens showed lithium in each particle.

When twenty grains of carbonate of lithia were taken seven hours before the operation, the lens showed lithium in each particle.

When twenty grains of carbonate of lithia were taken seven days before the operation, the lens showed not the slightest trace of lithium.

Twenty grains of carbonate of lithia, taken between six and thirty-six hours before death, showed the faintest indications of lithium in the lens. The cartilage showed lithium very distinctly.

Ten grains of carbonate of lithia, taken five hours and a half before death, gave only faint traces of lithium in the lens, but the cartilage showed lithium very distinctly.

5. *On the Presence of Lithium in Solid and Liquid Food.*

Potatoes showed traces of lithium once in five trials.

Apples showed traces of lithium thrice in four trials.

Carrots showed no lithium in two trials.

Bread showed traces of lithium thrice in three trials.

Cabbage " " twice in two trials.

Tea " " eight times in ten trials.

Coffee " " four times in five trials.

Port wine " " six times in six trials.

Sherry " " six times in six trials.

French wine " " four times in four trials.

Rhine wine " " eight times in eight trials.

Ale " " twice in three trials.

Porter " " twice in three trials.

Mutton, beef, and sheep's kidney showed no lithium : one kidney had a slight trace.

CONCLUSIONS.

1. *On the Rate of Passage of Solutions of Lithium into the Textures of Animals.*

Chloride of lithium taken into the stomach in quantities varying from one quarter of a grain to three grains, will pass into all the vascular parts of the body, and even into the non-vascular textures, in from one quarter of an hour to five hours and a half.

2. *On the Rate of Passage out of the Textures of Animals.*

Chloride of lithium passes out by the skin as well as by the urine; and thus the animals can redose themselves with chloride of lithium from the hair and feet, and prevent accurate observations. Hence probably chloride of lithium, in quantities varying from half a grain to three grains, will continue to pass out of the body for thirty-seven, thirty-eight, or thirty-nine days; and even after thirty-three days, traces may be found in the lens; but in three or four days no lithium may be detectable in the non-vascular textures.

3. In man, carbonate of lithia, when taken in five- or ten-grain doses, may appear in the urine in five to ten minutes if the stomach is empty, or twenty minutes if the stomach is full, and may continue to pass out for six, seven, or eight days.

In two hours and a half, traces may be in the crystalline lens, and in five or seven hours it may be present in every particle of the lens and in the cartilages. In thirty-six hours it may be very evident in the cartilages. And in seven days not the slightest trace may be detectable in the crystalline lens.

4. Though in the solid and liquid food infinitesimal quantities of lithium may enter the body, usually no proof of their presence in the organs or secretions can be obtained.

IV. "Lunar Influence on Temperature." By J. PARK HARRISON, Esq., M.A. Communicated by the Rev. R. MAIN, F.R.S. Received April 27, 1865.

The tabulation of an unbroken series of thermometric observations for the several days of the lunation during fifty years having been completed up to November 1864, and an amount of lunar action detected which appears sufficient to set at rest the long vexed question of the moon's influence over our atmosphere, I venture to think that the time has arrived when it becomes a duty to lay the results of the investigation before the Royal Society.